REMARKS

Claims 1-38 were presented in the prior application. Claims 1-38 were rejected. Claims 1-38 have been canceled. Claims 39-70 have been newly added.

Newly added independent system claim 38 recites in pertinent part, "... a processor, comprising standard non-true real time peripheral device control software; at least one peripheral device requiring true real time peripheral device control; and a generic device controller, coupled between the processor and the at least one peripheral device, for providing true real time peripheral device control for the at least one peripheral device in response to non-true real time control requests from the processor." Newly amended independent method claim 56 contains corresponding recitations.

In a system and method according to the newly added claims real time control for attached peripheral devices is provided by the generic device controller which is coupled to the devices. Non-real time control for the generic device controller is provided by the processor, which is coupled to the generic device controller. That is, in short, in a system and method according to the present invention, the intelligence for real time control of the peripheral device is located in the generic device controller coupled between the processor and the peripheral device.

In some prior systems, a central or main processor contains the intelligence for providing real time control for those peripherals which require real time control. This intelligence may be in the form of: (a) a real time processor; (b) a real-time operating system, or a real-time software overlay on a non-real time operating system; or (c) modifying the central or main processor to contain specialized circuitry to provide real time control of the peripheral device. In some such systems, the central or main processor may use a common protocol to communicate with the respective peripheral devices. In other such systems, the processor may communicate with the respective peripheral devices using protocols specific to the peripheral devices. Alternatively, these system may include intermediate processing circuitry to convert from a protocol used by the processor to the respective protocols used by the peripheral devices. This intermediate processing circuitry passes the real time control signals or commands from the central or main processor to the peripheral devices without substantial change. Instead, the intermediate circuitry changes the protocol from that of the processor to that of the peripheral device.

In other prior systems, each peripheral device includes within the peripheral device a peripheral processor which provides the intelligence for real time control for the peripheral. In such systems, the central or main processor may use a common protocol to communicate with the respective peripheral processors, or may use respective specific protocols to communicate with the respective peripheral processors. In the former case, intermediate processing circuitry may be provided to change from the common communications protocol used by the processor to the specific communications protocol used by the peripheral. However, no further intelligence is provided by the intermediate processing circuitry. In particular, no intelligence for providing real time control for the peripheral device is located in the intermediate processing circuitry. Instead, the intermediate circuitry changes the protocol from that of the processor to that of the peripheral device.

Swales, previously cited by the Examiner, discloses a system in which a master device 12 communicates with an I/O device 14 via a COM-adapter 10. The COM-adapter 10 communicates with the master device 12 using one protocol, and communicates with respective I/O devices 14 using corresponding specific protocols. However, the COM-adapter 10 does not include any intelligence for providing the real time control of the I/O device. Instead, the master device 12 provides the real time control for the I/O device 14 and the COM-adapter 10 merely converts the protocol of the master device 12 (MODBUS over TCP/IP) to that of the specific I/O device 14.

Montijo, previously cited by the Examiner, discloses a non-true real time computer having a non-true real time operating system and non-true real time enabled circuit board. The computer includes a display controller to provide real time control for a display, and an acquisition board for receiving signal data in real time. However, Montijo does not disclose a generic device controller, coupled between the processor and the real time peripheral device, providing real time control to the peripheral device. Instead, both of these real time systems are integrated into the computer.

Johnson teaches modifying a central or main computer to integrate additional circuitry to provide real time control for attached peripheral devices into the central computer. Johnson does not disclose a generic device controller, coupled between the computer and the peripheral device, providing the intelligence for real time control for attached peripheral devices.

In addition, all of the references cited above address and provide solutions for the problem of providing real time control for peripheral devices. One skilled in the art would have no reason to seek to change the design of these systems to provide real time control for peripherals because they already provide such control.

In view of the foregoing, the Applicant respectfully deems the newly added claims allowable and respectfully requests the Examiner to allow the claims and permit this application to issue.

Respectfully submitted,

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